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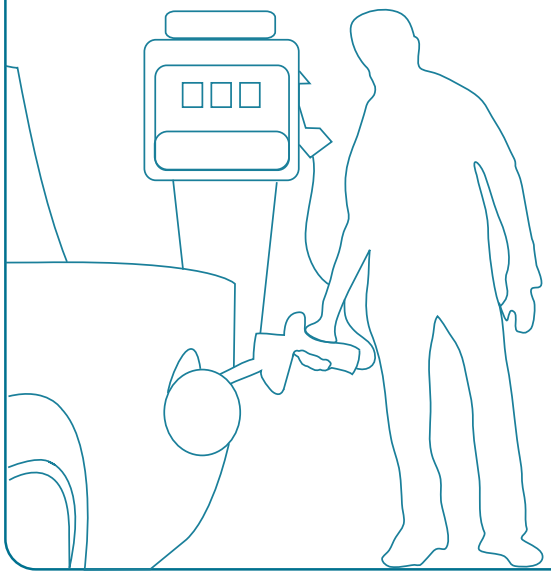
Essay:

The Promises and Challenges of Biofuels for the Poor in Developing Countries

Joachim von Braun and R. K. Pachauri

Annual Report 2005–2006

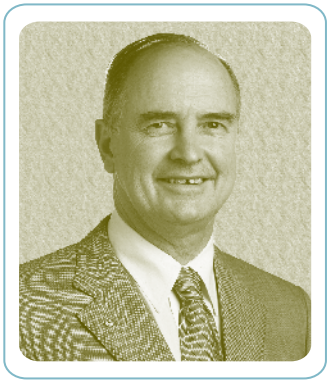


INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI®) was established in 1975. IFPRI is one of 15 agricultural research centers that receive principal funding from governments, private foundations, and international and regional organizations, most of which are members of the Consultative Group on International Agricultural Research.

CONTENTS

MESSAGE FROM THE CHAIR OF THE BOARD OF TRUSTEES



The International Food Policy Research Institute (IFPRI) continues to strive for a world free of hunger and malnutrition, and to contribute to efforts to raise living standards throughout the developing world. While there have been significant achievements, hunger and malnutrition persist in many developing countries, highlighting the need for continued attention to this fundamental problem.

IFPRI has devoted itself to this issue for many years; it celebrated its 30th anniversary in 2005. To commemorate the occasion, IFPRI published a book entitled *Food Policy for the Poor: Expanding the Research Frontiers*, providing highlights from IFPRI's research during the past three decades and including essays from the Institute's four former directors general.

Because addressing hunger and malnutrition requires action on many fronts, IFPRI believes collaborating with other CGIAR (Consultative Group on International Agricultural Research) centers is critical to achieving its mission. Earlier this year, IFPRI's Board endorsed the CGIAR Alliance Principles and Procedures, which will facilitate closer cooperation between the CGIAR centers. We are also engaged in systemwide discussions on how to improve governance of the centers.

In 2005, it became clear that the world energy situation is changing dramatically, with potentially far-reaching consequences for poor farmers and consumers. Therefore, this year's annual report essay focuses on the "Promises and Challenges of Biofuels for the Poor in Developing Countries." In the essay, Joachim von Braun, director general of IFPRI, and R. K. Pachauri, director general of The Energy and Resources Institute (TERI), discuss the growing potential of biofuels and how small-scale farmers and poor people in developing countries can take advantage of this opportunity.

This year, we bid farewell to several Board members: Isher Judge Ahluwalia, Frances Stewart, Roberto Vazquez Platero, and Simei Wen. We thank all of them for their support and guidance, especially Isher Judge Ahluwalia, who for the last three years served as IFPRI Chair of the Board. During their tenure, IFPRI expanded its activities in Africa, Asia, and Latin America and consistently produced research results of the highest quality.

In June 2006, I became Chair of the Board. It is a privilege and honor to lead IFPRI's governing Board. IFPRI will continue to boldly and independently communicate its research findings, even if they are controversial. IFPRI will continue to be a valued strategic partner within the CGIAR system and the growing community of partners and stakeholders. We will continue to have a strong presence in developing countries through partnerships, networks, and decentralized operations. And finally, we will continue to make a substantial contribution to thought about raising living standards in developing countries, especially in rural and poor communities.

Ross G. Garnaut
Chair, IFPRI Board of Trustees

INTRODUCTION FROM THE DIRECTOR GENERAL

Last year was a promising year for initiatives to reduce poverty and hunger in the context of the Millennium Development Goals. But in 2006 there has been an apparent lack of follow-up to the raised hopes and global promises of 2005. While some of the large developing countries of Asia and Latin America have made progress—especially China, India, and Brazil—the situation remains dire in Sub-Saharan Africa and in many of the smaller countries. More must be done.

The past year has been a very productive and exciting one for IFPRI's research, communication, and capacity strengthening activities, many of which are highlighted in the following section on the Institute's 15 policy themes. Not only did research output per researcher increase, but IFPRI continued to grow as an institution and was at the forefront of a wide range of political topics, three of which I would like to highlight here:

- While the Doha round of the World Trade Organization negotiations came to a halt in July 2006 over agriculture-related issues, IFPRI researchers showed that even moderately ambitious trade reforms would have led to substantial benefits for the world economy and for the poor. IFPRI will continue to examine opportunities for change in trade policy reform at multilateral and bilateral trade negotiation levels.
- National and international development policies are focusing more on agriculture. IFPRI, among others, has contributed to this changed strategic perspective. Transforming the world's small-farm sector, connecting these smallholders to markets and technology, and creating job opportunities in rural areas will remain a global challenge for generations to come. Public-private partnerships may help achieve some of these goals.
- At a time when the idea of "good governance" has taken center stage in the international development arena, researchers at IFPRI are identifying areas of governance that are particularly important for food security, nutrition, and the rural poor. Special attention is being given to decentralized political decisionmaking and to making state institutions as well as nongovernmental organizations more accountable.

One emerging area of IFPRI research involves the linkages between agriculture and health. There is growing recognition that agriculture influences health and health influences agriculture, and that both have profound implications for poverty reduction. In this context, IFPRI has intensified its collaboration with other CGIAR centers on these issues with a new CGIAR platform on the linkages between agriculture and health.

Even if the Millennium Development Goals (MDGs) were to be achieved, many people would still be hungry and poor. IFPRI has therefore begun to plan for a multi-stakeholder conference in 2007 to examine new strategies and actions targeted at those people who will not be reached by the MDGs. The optimal combination of pro-poor growth and social protection policies and programs may need to be redefined in low- and middle-income countries, especially in rural areas, where most of the poor and food insecure live.

I would like to express my warmest appreciation to IFPRI's highly committed and hardworking staff members for their great contributions and achievements in the past year. The very positive External Program and Management Review of the Institute, which was endorsed at the Annual General Meeting of the CGIAR in 2005, has motivated all of us at IFPRI. I would also like to take this opportunity to thank our financial contributors and partners for their trust, cooperation, and strong support, and to gratefully acknowledge our many collaborators and colleagues who have helped assure the relevance and quality of our work.

Joachim von Braun
Director General

The Promises and Challenges of Biofuels for the Poor in Developing Countries

Joachim von Braun and R. K. Pachauri

The changing world energy situation has generated intensive discussion about biofuels, much of it promising a source of environment-friendly energy that would also be a boon to the world's farmers. But to make a difference in the lives of poor people and farmers as both energy producers and consumers, advances are required in biofuel technology, and appropriate investments and policies must be carefully considered.

Biofuels include fuel sources that have been used for millennia, like fuelwood and charcoal, as well as newer sources like ethanol, biodiesel, and biogas. These new sources depend on natural vegetation, on crops grown specifically for energy, or on agricultural or other forms of wastes and residues. Appropriate processing can make these biofuels cleaner and more efficient than traditional forms of biofuels, if they are produced in ways that reduce net carbon emissions.

Energy crops could provide farmers with an important source of demand for their products, like sugarcane, maize, soybeans, oil palm, and rapeseed, and many developing countries already grow or could grow these crops. A modern biofuel industry could also provide developing-country farmers with uses for crop residues like stalks and leaves, which can be converted into ethanol or electricity, and for new crops like *jatropha*.

Biofuels could also improve the lives of poor people as energy consumers by helping to meet their basic needs and enhancing their livelihoods. Locally produced biofuels could provide power for cooking, water pumping, lighting, transport, and agroprocessing.

The future of biofuels in the context of world agriculture and the world energy sector is hard to assess. Rather than aiming to "predict" such a future, IFPRI researchers looked into a set of scenarios of alternative policies and their outcomes using IFPRI's International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT). An aggressive biofuel scenario that assumes that current plans for expansion of the sector in Africa, Asia, Europe, and North and South America are actually realized could lead to significant price increases for some food crops by 2020—about 80 percent for oilseeds and about 40 percent for maize—unless new technologies are developed that increase efficiency and productivity in both crop production and biofuel processing. When this scenario is combined with productivity improvement and second-generation cellulosic conversion, price increases are softened to about 40 percent for oilseeds and 20 percent for maize by 2020.

In any case, other crop and animal product prices would also increase because of input and

output market linkages. Hence, without technologies to improve productivity, the price changes associated with aggressive biofuel growth would adversely affect poor, net-purchasing households and would also exceed the possible income gains in many small farm households.

So, although there are some risks that crop production for biofuels may compete with food production, thereby increasing food insecurity, farmers can combine food production with energy production if innovative technology comes into play or if energy crops are targeted to more marginal lands. In addition, research must help enhance overall crop productivity.

Currently, however, investments in biofuel capacities are running far ahead of investments in research to enhance agricultural productivity. The result could be a risky situation for the world food equation. Moreover, stronger linkages between oil price fluctuations and food prices, due to use of a growing share of crops for biofuels, could lead to new sources of instability in food prices and consequent food security risks. Such food price fluctuations may actually be more serious for the poor than any gradual increases of food prices that could result from biofuels' shifting effects on the world food balance. Biofuel trade can help reduce price fluctuations when markets are linked. Therefore the international community must create a level playing field for trade in biofuels.

Indeed, actors at international, national, and local levels all have crucial roles to play in developing a biofuels sector that is sustainable and pro-poor. International institutions must help transfer knowledge and technology for developing an efficient and sustainable biofuels industry to poor countries. At the national level, policymakers must take steps to create a well-functioning market for biofuels in coordination with other energy sources and the automobile industry. They must also provide farmers who wish to grow energy crops with research and extension services, credit, and access to infrastructure. With sound technology and trade policies, win-win solutions—that is, positive outcomes for the poor as well as for energy efficiency—are possible with biofuels in developing countries.

Joachim von Braun *is director general of IFPRI, and* **R. K. Pachauri** *is director general of The Energy and Resources Institute (TERI) in New Delhi, India.*

The full essay is available in booklet form. To download it, please visit www.ifpri.org. You may order a hard copy at www.ifpri.org.

Global Food and Natural Resources

Strategies and Policies for Adapting to Global Change

In the coming decades, global change will affect food and water security and the livelihoods of poor farmers, herders, and fishers in significant but highly uncertain ways. This change is already evident in many areas, such as climate patterns and extreme weather events; trade regimes and consumer preferences; human health; and biological, communication, and information technologies. All will have important implications for agriculture. Some research suggests that climate change, for example, will cause conditions for crop cultivation to deteriorate in tropical and some temperate regions. Adaptations in agricultural systems, however, can help mitigate the impact of climate change through policies, technologies, and management strategies that improve adaptation to drought and enhance nitrogen- and water-use efficiencies and carbon sequestration. It is therefore essential to understand how technology, trade, and better coping strategies can facilitate adaptation to climatic and other global changes.

By analyzing the dynamics of the global food system under scenarios that couple expectations about the key driving forces of change with sets of promising response options, IFPRI researchers are working to provide policy and investment decisionmakers with the knowledge and tools to respond appropriately to global change. Response options include those that might reduce exposure and vulnerability to negative outcomes, foster adaptation to the negative consequences of change that cannot be mitigated, and enhance the capacity to capitalize on the positive aspects of change. The highest research priority will be to identify complementary sets of policy and investment interventions that enhance both the food security and livelihoods of the poor and the sustainability of the natural resources on which they rely in the long term.

Specific research objectives include

- evaluating the key drivers of change and uncertainty in global food systems and developing an initial set of plausible futures;
- providing more powerful analyses of the impacts of change and uncertainty on human welfare, natural resources, and the food system via the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) and its related commodity projection models;
- generating spatial data on the extent, distribution, and intensity of rainfed and irrigated crop production systems, livestock production systems and fisheries, urban and rural populations, infrastructure, and natural resources (climate, soils, land cover, water resources, carbon storage, and biodiversity);
- developing an overarching and comprehensive analytical framework in which to evaluate various strategic, technological, and institutional interventions; and
- creating a comprehensive communications strategy that provides a highly accessible means of disseminating research findings, coupled with outreach that enhances the capacity of decisionmakers and analysts to utilize and demand information of this kind.

Globalization and Markets

The inefficiency of international and domestic markets is traditionally viewed as a key economic constraint in the developing world. While there is widespread consensus that trade liberalization generates gains for all trading partners in the aggregate, its impact on poverty continues to be a subject of considerable debate among academics and policymakers because of the potential adverse effects it can have on rural/urban poverty, employment, and income distribution. IFPRI's trade policy research therefore aims to study the policies and institutions needed to ensure pro-poor management of the globalization of food and agricultural systems, thereby helping developing-country stakeholders to evaluate the implications of globalization and design adequate policies and societal responses in support of rural development, poverty alleviation, and food security. Policy changes supported by this research are expected to accelerate income growth through increased access to both domestic markets and international trade.

In 2005 and 2006, researchers carried out reviews and ex ante impact analyses of global trade negotiations conducted by the World Trade Organization under the Doha Development Agenda to examine the effects of the considered trade policy changes on the poor. The study concluded that full trade liberalization is globally beneficial and can facilitate poverty alleviation, though it would require ambitious trade reforms to benefit the poor. Policy recommendations emerging from the study were, first, that tariff and domestic-support cuts on the part of developed countries have to be large and progressive, especially in agriculture, and, second, that developing countries also need to liberalize their economies. The study also noted that, while full trade liberalization can provide real overall gains in developing countries (such as a $157 billion increase in annual worldwide real income and a 12.1 percent expansion of world trade), specific countries might experience negative effects, either because increased world prices for agricultural commodities are hurting net food-importing countries or because certain countries' preferential market access will have eroded. Additional policy research activities will examine the impact of the Economic Partnership Agreement on African countries.

Researchers also measured the precise impact of trade liberalization on poverty through an analysis of cotton prices and poverty levels in Pakistan. They found that a 20 percent increase in the price of cotton, which is roughly the change that may result from eliminating various subsidies on cotton by countries that belong to the Organisation for Economic Co-operation and Development (OECD), would raise 2 million cotton producers and their families above the poverty line. Similar analyses are also being undertaken for the countries of the Near East and North Africa.

Another area of investigation has been the impact of the Central American Free Trade Agreement (CAFTA) on economic growth, employment, and trade in member countries; on new market opportunities for agricultural and agro-industrial products; and on income and employment opportunities for small farmers and other poor rural household groups. This project, which will continue into 2007, will enrich the public debate and inform decisionmakers about the best policy options in public investment on infrastructure and institutions that might be undertaken during the transition period to help maximize the economic benefits and minimize the social costs of CAFTA to smallholders in Central America.

Because technical barriers are important impediments to agricultural trade, especially for the poorest countries seeking to export to OECD markets, IFPRI has embarked on a series of studies to help enhance trade opportunities. One study examined the role of technical barriers facing agricultural exports in countries adhering to CAFTA. Specifically, it analyzed the impact of removing the partial U.S. import ban on fresh Mexican avocados in 2005 and found that the anticipated doubling of exports as a result would lower Mexican compliance costs from nearly 20 percent to about 10 percent of producer prices per unit. An examination of technical barrier constraints in China is also underway.

Water Resource Allocation

Productivity and Environmental Impacts

Clean freshwater is essential for life, economic development, and a healthy environment. Due to population and economic growth, however, water demand for household, industrial, and agricultural uses is growing, watersheds and irrigated land are deteriorating, and ground and surface water pollution is increasing. In much of the developing world, the growing demand for urban and industrial water will require transfers of water from agricultural uses, threatening food production

IFPRI researchers are working to develop policies and investment options to improve water-allocation mechanisms at the local, system, and river-basin levels, at the same time contributing to productivity, equity, and environmental goals. They are also building practical modeling tools for use by water planning agencies in estimating the economic value of water and analyzing the consequences of different water-allocation and management policies. IFPRI's cooperation in the Water and Food Challenge Program led by the International Water Management Institute is part of these initiatives.

At global and regional levels, IFPRI is expanding its integrated food and water projections model, IMPACT–WATER, into the IMPACT–Global Change framework. At the river-basin level, researchers are examining the effect of water allocation mechanisms on agricultural productivity, farmer welfare and equity, and resource degradation using an economic/hydrological/institutional modeling framework. At the local or irrigation-system level, researchers are focusing on the nature and evolution of institutional arrangements for water allocation, particularly organizational structures and forms of water rights management.

IFPRI researchers analyzing the global and national water system have concluded that forces outside the water sector—such as trade and investment arrangements—will lead to more changes in water management during the next 20 years than have occurred in the past two millennia. Therefore, the linkages between declining water quality levels, falling groundwater tables, trade, and economic liberalization must be addressed, and policy reforms must ensure that small-scale producers are not left out of increasingly internationalized trade agreements that indirectly affect water.

An IFPRI project in Chile and Ghana is examining the decisionmaking process of community institutions involved in natural resource management. Researchers will also identify ways to strengthen the capacity of collaborating institutions to undertake research on collective action and then design and implement effective policies. Other research in Burkina Faso, Botswana, Ghana, Mozambique, South Africa, and Zimbabwe looks at how transboundary water management can build on customary institutions.

Land Resource Management for Poverty Reduction

Land-based resources are a critical asset for the majority of poor people in developing countries who rely on such resources to generate most of their income and subsistence goods. The sustainable management of land-based resources, including croplands, grazing lands, forests, and wetlands, can have a major impact on the welfare of the rural dwellers who use these resources. Thus far, research has focused on Africa, Latin America, and Southeast Asia.

In West Africa, IFPRI has recently completed research and dissemination activities on the impacts of input-supply shops, inventory credit, and fertilizer micro-dosing in Niger and has started a new project there evaluating the impacts of land rehabilitation projects. Other initiatives in less-favored lands include a new project on rural development

and poverty reduction in the mountain regions of Peru.

Researchers working on a long-term project promoting sustainable land management in the East African highlands have been disseminating the results and working to strengthen capacity by providing training to Ethiopian stakeholders. They plan to initiate new research on the impacts of sustainable land management programs in Kenya and on smallholder commercialization and natural resource management in Uganda, Rwanda, and the Democratic Republic of Congo. Researchers also completed and disseminated outputs, including a forthcoming research report on livelihood strategies and land management in the hillsides of Honduras.

A project in South Africa is exploring the potential consequences of the country's national land reform goals on future economic growth and poverty reduction. Using descriptive analysis and a computable general equilibrium model based on a social accounting matrix, researchers will help improve the understanding of trade-offs between different land distribution policies, and will present the results to South African government officials.

In Southeast Asia, IFPRI is completing a study in Indonesia on payment for environmental services. The project has analyzed the impacts of a government-sponsored social forestry program that provides long-term land tenure contracts to Indonesian farmers who plant trees in degraded state forest land, use conservation measures, and protect the remaining forest. Because payment for environmental services is a fairly new area of policy and program emphasis with the potential to address environmental problems and poverty in less-favored areas, researchers hope to expand the study to less-favored areas in other countries.

Systemwide Program on Collective Action and Property Rights (CAPRi)

Collective action and property rights play key roles in determining agricultural productivity and food security, access to natural resources, and the likelihood that those resources will be available to meet future needs. Therefore, a deeper understanding of these institutions is essential for developing effective solutions to combat poverty. The spatial scale of many natural resources, such as forests, rangelands, watersheds, and irrigation systems, often means they can be managed more effectively by groups of people. Aside from productivity considerations, collective action can also enable a more equitable distribution of resource benefits and joint provision of other critical services. However, collection action requires voluntary adherence to a common set of rules and coordinated contributions by its participants. Its success, therefore, depends on the incentives in place to evoke and sustain it.

CAPRi, a CGIAR-wide initiative managed by IFPRI, contributes to rural poverty-alleviation policies by analyzing and disseminating knowledge on the ways that collective action and property rights institutions influence the efficiency, equity, and sustainability of natural resource use. The initiative also works to enhance the emergence and performance of voluntary, self-governing, and self-adapting community organizations, and of different property institutions in natural resource management, and to analyze their effect on rural livelihoods. Currently, CAPRi supports ongoing research in South Asia (India), Southeast Asia (Cambodia, Indonesia, and the Philippines), and East Africa (Kenya, Ethiopia, and Uganda).

Asia

Although life has improved in many Asian countries, some 800 million Asian people still live in poverty. Most still rely on agriculture for both their food and their livelihoods, a dependency that places enormous pressure on natural resources. Further agricultural growth is needed to complete the economic transformation of rural Asia, but it must be more equitable and environmentally sustainable than it has been in the past. It must also capitalize on changing food consumption patterns in the region and on a growing global demand for diverse products.

IFPRI has worked extensively in the region to meet these challenges by undertaking major projects on markets, nutrition, water, agricultural technology, and other critical issues. Below are some highlights:

- IFPRI established a South Asia Initiative in 2002, opened an office in New Delhi in 2005, and appointed a New Delhi-based regional director in 2006. Part of the Initiative, the South Asia Network, has been conducting research on agricultural diversification to high-value commodities, emphasizing smallholders, as well as undertaking research on trade liberalization and food security. The latter work has focused particularly on Bangladesh and Pakistan, while the studies on diversification have focused more on Bangladesh, India, and Sri Lanka. The Network also organized several regional meetings and workshops.
- IFPRI established a China program and opened a Beijing office in 2004 to focus on strategic policy research, capacity strengthening, and policy communication.
- IFPRI has worked extensively in Southeast Asia, assisting governments to devise alternative natural resource management policies, food marketing strategies, and other initiatives to help these countries cope with their significant and ongoing agricultural transformations.
- As part of the CGIAR's Central Asia and Caucuses systemwide program, IFPRI is seeking to expand its research efforts in the region and has embarked on exploratory needs assessments.

MANAGING NATURAL RESOURCES

Because empirical information on the importance of collective risk management, risk sharing, and risk-coping strategies is rare, a CAPRi project in Ethiopia and the Philippines, led by IFPRI researchers as part of the Pathways from Poverty program, is examining the role of collective action through networks to determine how the poor manage their exposure to risks and cope with shocks to their livelihoods. Researchers are investigating the impact of collective risk sharing on short-term vulnerability and the capacity of households to move out of poverty in the long run. A secondary research goal of the project is to examine the link between property rights and poverty by investigating the degree of complementarity and substitutability between different private assets and social networks.

CAPRi undertook several outreach activities in 2005. It conducted an international workshop on gender and collective action in Thailand; implemented a training course on the links between property rights, collective action, and natural resource management in India; and co-hosted a workshop on land tenure for drylands development in Nairobi with the United Nations Development Programme and the International Land Coalition. In 2006, it is coordinating a research workshop on the role of collective action to strengthen market access for smallholders.

Rebuilding after Crises

Although most hunger can simply be attributed to poverty, between 5 and 10 percent of acute global hunger in any given year stems from droughts; floods; armed conflict; and political, social, and economic disruptions. In 2005, 55 million people in 45 countries faced severe food emergencies resulting from these factors. The global humanitarian response system has proved unequal to the task of meeting emergency needs in recent years. There remains a shortfall of international humanitarian aid.

Consequently, IFPRI has decided to further explore the issue of rebuilding after crises. New research, drawing on past IFPRI work on famine, will focus on prevention, mitigation, and response to disasters, including conflict, HIV/AIDS, and weather-related shocks. The work will emphasize post-crisis rebuilding of food, agriculture, and nutrition systems at national levels, and will explore the roles of local institutions in preventing crises through sustainable natural resource management related to food, with a major focus on women and children. Research will also examine how to improve early warning systems and international crisis response, including food aid.

In terms of restoring food security in the aftermath of intense conflict, IFPRI researchers are examining how to address the political, social, and institutional context so as to avoid renewed conflict. One finding—that under certain circumstances cash crops can function to create and support conflict as do other commodities, such as diamonds and petroleum—highlights the need to understand how commodities contribute to conflict as well as to peaceful development, especially post-conflict. A specific issue here is how best to rebuild agricultural research systems in post-conflict and crises-prone countries, especially in Africa.

HIV/AIDS and Food Security and Nutrition

HIV/AIDS is not an emerging issue; however, the interactions between HIV/AIDS and food insecurity and malnutrition have only recently come to light, particularly in Sub-Saharan Africa, which is home to more than 60 percent of all people living with HIV/AIDS. Examining these interactions and their impact on food and nutrition policy and on the Millennium Development Goals (MDGs) is essential, and IFPRI's involvement ensures a sustained focus on key knowledge gaps through research that is proactively linked to capacity development and policy communications.

IFPRI's goals in this field are to enhance understanding of the two-way interactions between HIV/AIDS and food and nutrition security, and to improve the effectiveness of food- and nutrition-relevant policy and programming in the context of HIV and AIDS. Specific objectives include:

- reducing critical gaps in understanding how livelihoods, particularly those derived from agriculture, contribute to the further spread of HIV and are affected by HIV and AIDS;
- generating new policy-relevant knowledge on how households and communities may strengthen both their resistance to HIV transmission and their resilience to the impacts of AIDS; and
- enabling relevant institutions—particularly governments—to generate and act on realistic priorities in response to the interactions between the AIDS epidemic and food and nutrition insecurity.

The flagship program under this research theme is RENEWAL—the Regional Network on HIV/AIDS, Rural Livelihoods, and Food Security. Established in 2001 and facilitated by IFPRI, RENEWAL comprises national agricultural institutions; public, private, nongovernmental organizations (NGOs), and farmer organizations; and partners working on AIDS and public health. The first networks were established in Malawi, South Africa, Uganda, and Zambia. In 2005, Kenya was added, and a regional coordinator and five national coordinators were appointed. The highlight of the year was a landmark international conference on HIV/AIDS and Food and Nutrition Security held in Durban, South Africa. The findings have been published as an IFPRI book entitled *AIDS, Poverty, and Hunger: Challenges and Responses.*

Policy Processes in Food Security and Nutrition

Though a great deal is known about the policies and programs needed to increase food security and reduce malnutrition, actions and results lag behind knowledge. In order to remedy this situation, IFPRI has been exploring the reasons for a lack of policy attention to food and nutrition issues, as well as investigating the influence of politics and other policy processes on policy choices and real-world outcomes.

One way in which IFPRI researchers are helping to close this gap and improve food security and nutrition is by working with local stakeholders to draft national nutrition strategies. In Uganda, IFPRI was asked to strengthen the country's food and nutrition strategy and investment plan by linking it to an appropriate conceptual framework, incorporating a rights-based approach to guide government action, and developing an institutional structure and implementation plan for the strategy. IFPRI researchers have also worked on drafting comprehensive background papers on the determinants of malnutrition in Ethiopia as inputs into Ethiopia's national nutrition strategy.

Another way to approach the issue of food security is to view food as a human right. Many development organizations, researchers, and governments have acknowledged it as such, leading IFPRI to examine whether the use of this concept leads to greater public action, and if so, why, how, and under what conditions. Researchers are currently developing indicators of progress in establishing a right to food and are assessing the added value of the legal recognition of the right to food in achieving food security.

Governance and Policy Processes

The role of governance in achieving pro-poor development outcomes has been increasingly recognized in recent years, accompanied by a surge in related research and capacity-building activities. However, governance issues of importance for agricultural development and the rural poor have been rather neglected. Hence, there are major knowledge gaps regarding which governance reforms are most suitable for improving service provision in rural areas, addressing gender-specific needs in rural service provision, improving the governance of agricultural sector institutions, and increasing the participation and voice of the rural poor in political decisionmaking processes.

IFPRI is working to fill this gap by conducting research on the governance of agricultural-sector institutions, decentralization and local governance, and agricultural and development policy processes. One area of research focuses on identifying how political, fiscal, and administrative decentralization in India can contribute, first, to increasing the performance of public goods and service provision and, second, to implementing programs for pro-poor development based on the country's rich and diverse experience. Two in-depth case studies have been completed and the results discussed with local stakeholders and policymakers, and—informed by the feedback—a village-level and household survey is now underway.

Further research in this area will be extended to Ghana and Uganda.

Another research project in India is examining the political economy of electricity supply for groundwater irrigation, an important policy area for Indian agriculture that is causing major economic, social, and environmental concerns. Researchers have interviewed a wide range of stakeholders to assess the political feasibility of different policy solutions. IFPRI is also working in Ghana to analyze the processes of agricultural policymaking by focusing on the dual roles of stakeholder participation and research in making agricultural policies more pro-poor. IFPRI researchers are working on other issues as well, such as analyzing biotechnology regulation in West Africa.

Food and Water Safety

Food and water safety directly affect the well-being of the poor as consumers and agricultural producers. Consumption of unsafe water is a major cause of preventable death and disease globally, with an estimated 2.2 million deaths each year from diarrhea, mostly among children. Food safety concerns have become particularly salient, as recent food scares and associated illnesses have increased political awareness of the need to ensure the production and delivery of safe food to consumers.

Food safety and food security are intrinsically linked with water quality. Food production entails the use of water for activities ranging from irrigation to postharvest processing. Water serves as a vehicle to spread potential contaminants, including pathogens from organic manure, fertilizers, pesticides, and effluents. Understanding the sources of food and water safety hazards and finding ways to mitigate the effects is required to improve water quality for poor consumers and to meet the production requirements of high-value export markets.

IFPRI is developing a food and water safety research program to address these issues, which will encompass four areas: (1) calculating the cost to smallholders of complying with increased food safety requirements; (2) establishing public–private partnerships to ensure the delivery of safe food; (3) understanding the sources and impact of plant, animal, and food-borne diseases, identifying cost-effective control strategies to minimize these diseases, and designing decision tools to aid policymakers; and (4) examining the relationship between water quality and food security and how policies, technologies, and investments in food security, poverty alleviation, economic growth, and rural livelihoods influence this relationship.

Sub-Saharan Africa

Recent economic growth and a new commitment to change among African leaders and development partners means Africa may be poised to achieve real progress toward food and nutrition security for the first time in decades. Sustaining and accelerating growth to achieve the Millennium Development Goals for poverty reduction and nutrition will, however, require clear strategies to guide future policy and investment decisions, especially since the recent growth has not led to much improvement in rural areas, which are home to the majority of poor Africans.

Given these challenges and the potential for real progress, IFPRI continues to allocate a significant share of its resources to the region. In 2004, IFPRI appointed a senior-level Africa coordinator. In 2005, in addition to housing a division in Africa, IFPRI expanded and initiated country-strategy research programs in Ethiopia, Ghana, Nigeria, and Uganda and further enhanced its activities in the region in coordination with African partners.

IFPRI's cooperation with the New Partnership for Africa's Development (NEPAD) serves to help advance the implementation of the Comprehensive Africa Agriculture Development Programme (CAADP). In 2005, IFPRI helped NEPAD to develop a roadmap for the implementation of CAADP's agenda. Further, by successfully mobilizing development partners around the CAADP agenda and laying the groundwork for launching the process at the country level, IFPRI helped NEPAD put the roadmap to use, as ownership of the process was transferred to regional economic development communities.

IFPRI's strategy ensures that it will continue to address basic and long-term food policy research gaps to inform and guide regional and national policies. IFPRI's primary role in the region—creating locally and globally relevant knowledge as a public good to positively influence food policies in Africa and beyond—will anchor its strategy for cooperation in Africa.

HarvestPlus

Vitamin A deficiency affects nearly one-third of the population of Africa. It can cause blindness, growth retardation, reproductive disorders, and damage to mucous membranes. Children with vitamin A deficiency are often deficient in other micronutrients as well, and are likely to be anemic and more susceptible to common childhood infections such as diarrheal diseases and measles.

In addition to carrots, mangoes, and spinach, the orange-fleshed sweetpotato (OFSP) is one of a few foods containing very high amounts of readily bioavailable provitamin A in the form of beta-carotene. Recent studies have shown that daily consumption of OFSP could provide children with around 2.5 times the daily requirement for vitamin A and significantly improve the liver's vitamin A stores. However, most Africans have traditionally produced and consumed white-fleshed sweetpotato, which has little provitamin A content. The challenge, therefore, has been to develop an acceptable variety of OFSP and to encourage its production and consumption.

As coordinators of the CGIAR Biofortification Challenge Program, HarvestPlus, IFPRI, and the International Center for Tropical Agriculture have been working to meet that challenge. First, HarvestPlus partners successfully bred the OFSP—the program's first nutrient-dense staple food crop—to be acceptable to African farmers and consumers. Now, the program is embarking on dissemination efforts, thanks in large part to a grant by the Bill and Melinda Gates Foundation. These efforts are being undertaken on two fronts: operations research and implementation programs to ensure that the biofortified OFSP is deployed effectively through an integrated monitoring and feedback system. The first year of the project will determine the state of production, marketing, and consumer demand. Then, within a three-year timeframe, HarvestPlus will work to develop the capacity of end users (producers, consumers, and processors/retailers), while creating awareness among the enablers and diffusers of the new technology.

Diet Quality and Health of the Poor

Micronutrient malnutrition, which is the most widespread nutritional problem facing the world today, is a major contributor to child mortality and continues to stunt the growth, development, and learning potential of many millions of surviving children. The symptoms of malnutrition among the poor are also manifested through the overconsumption of cheap, energy-rich but nutrient-poor foods, leading to obesity in populations still affected by high rates of micronutrient deficiency. This nutrition transition, which is rooted in the processes of globalization, is not just affecting the affluent: obesity and related diseases are now problems for poor countries and poor people. These nutritional problems provide serious health challenges. Undernutrition is linked with diarrheal diseases; micronutrient deficiencies increase the risk of infections; and obesity leads to diet-related chronic diseases, such as heart disease, diabetes, and some cancers.

IFPRI's research on micronutrients focuses on the strategies that can improve diet quality among the poorest and most vulnerable members of society, including women. One project in this area showed the feasibility and significant impact of using micronutrient sprinkles to reduce anemia among infants and young children in rural Haiti.

Research on obesity and diet-related chronic diseases focuses on identifying how economic drivers affect the problem among poor people in developing countries. One project is studying food consumption patterns in Guatemala and Mexico with the goal of understanding how prices affect consumption and the role of processed foods in the nutrition transition. A project in Central America will analyze the impact of trade policy on the double burden of malnutrition in the region.

The recently formed CGIAR platform on agriculture and health, which spans different themes among CGIAR centers, is driven by evidence that poor health can compromise the ability to reduce poverty, and that agriculture, including agricultural research, can play a role in reducing ill health. IFPRI activities in this area have included the recent publication of a 2020 Focus Brief on the linkages between agriculture and health—a collection of 16 wide-ranging policy briefs from scholars around the world.

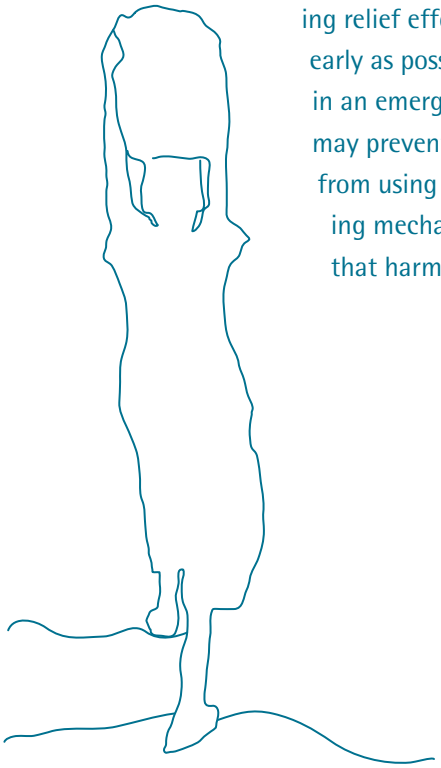
Pathways from Poverty

The Pathways from Poverty program was created on the premise that a better understanding of the processes and policies that create, or block, pathways from poverty is central to IFPRI's mission to explore sustainable options for ending poverty and hunger. The program seeks to examine what causes individual and household welfare to change over time, with particular focus on the long-term impact of specific interventions, shocks, and broader programmatic and policy changes. Thus, building and analyzing longitudinal household data sets is central to the mission of this research program.

In one project in Guatemala, IFPRI is studying the long-term impact of improved nutrition, achieved through a controlled supplementation trial conducted in the early 1970s, on child growth and development. From 2002 to 2004, IFPRI researchers traced and re-interviewed participants in the original intervention and determined that exposure to supplementation from birth to 36 months is causally linked with improved scores on tests of nonverbal cognitive ability and reading in adults and with increased grade attainment by women. Researchers will extend this fieldwork into 2007 by surveying the parents and children of these individuals.

In Ethiopia, researchers have been studying the long-term impact of shocks, such as drought and famine, and the interventions used to mitigate them. Research results indicate that targeting of food aid after the 2002 drought was only modestly successful and that launching relief efforts as early as possible in an emergency may prevent people from using coping mechanisms that harm their health or nutritional status (such as reducing the number of meals) or compromise their livelihoods (such as selling productive assets). Early action means that early warning systems need to be in place prior to an emergency.

A recent IFPRI study in the Philippines has shown that credit constraints not only reduce a household's ability to accumulate wealth, but also negatively affect its health and educational status, and harm successive generations. Because these constraints play an important role in parents' inability to make long-term investments, the provision of consumption-smoothing mechanisms, especially for the poor, is likely to have favorable long-term impacts on the poor's ability to invest in both physical and human capital.

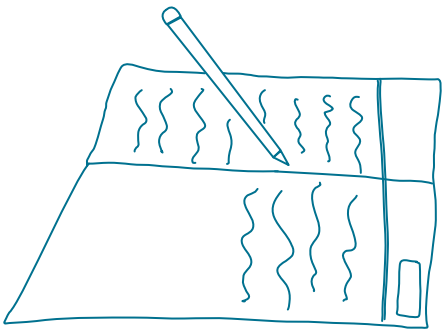


Large-Scale Interventions to Enhance Human Capital

Social protection interventions that emphasize human capital can contribute to sustainable improvements in health, education, and nutrition, which in turn can lead to sustainable reductions in poverty in the medium and long terms. IFPRI's work in this area focuses on evaluating programs that promote long-term, sustainable poverty alleviation through improved human capital in both current and future generations. The goal of this research is to increase understanding of the factors underlying successful programs in terms of implementation, performance, cost-effectiveness, and stakeholder participation.

Two recent projects have involved evaluating cash transfer programs. One has compared food and livelihood security outcomes between tsunami-affected households in Sri Lanka receiving food assistance and those receiving an equivalent amount of cash assistance. Results indicate cash-receiving households were more likely to allocate some of their benefits toward improving the diversity of their diets, although this increased diversity was achieved at the expense of reduced consumption of rice—the staple food. Another project is assessing the impacts and effectiveness of a conditional cash transfer program in Turkey that targets the poorest 6 percent of the population. Preliminary results indicate that this program, which is quite effective in reaching the poorest, increases primary school enrollment and immunization among beneficiary children.

Researchers have also compared the effectiveness of two different models for improving child nutrition in Haiti. One is a recuperative program, offering food supplements to children who are undernourished; the other is a preventive program, which provides food to all children under the age of two years in an effort to intervene before growth retardation begins. The preventive approach was found to be the more effective of the two in reducing child undernutrition.



Another project in Northern Uganda is investigating the impact and cost-effectiveness of alternative modalities of school-based feeding programs for increasing school participation, fostering learning, and improving nutrition. The pre-program baseline survey for this study was completed in 2005, and a re-survey is scheduled for 2007.

Finally, researchers are evaluating a program designed to reach out-of-school children in Bangladesh. While the country's education interventions have been impressive, a significant proportion of mostly poor children do not attend school. The program being evaluated both encourages these children to attend learning centers and seeks to improve the quality of the education they offer.

Priorities for Public Investment in Agriculture and Rural Areas

In an effort to achieve the MDGs, many developing countries and their partners need to make informed priority-setting decisions among sectors and regions. Therefore, IFPRI researchers have conducted studies in China, India, Vietnam, and the Middle East to examine how governments can more effectively target their limited or declining resources. The studies have shown that public investment in agriculture and rural areas is a major contributor to economic growth, rural poverty reduction, and long-term food security.

Researchers have conducted similar studies in Ethiopia, Tanzania, and Uganda. In Ethiopia, the single largest contributor to rural welfare returns was public investment in road infrastructure. Nevertheless, strong variation in the effects of such investments exists across regions, suggesting that regionally differentiated investment strategies in road infrastructure should be pursued. In terms of agriculture, two regions encompassing major urban towns were the most strongly affected, income-wise, by public spending, indicating that the proximity of rural households to major markets may considerably increase the returns from high agricultural productivity.

Researchers have also analyzed the impact of western China's entry into the World Trade Organization on smallholders and found that inequality within villages is as prevalent as inequality within provinces and countries. Hence, effective targeting of investments and social spending to poor communities and households in the region is needed. Finally, another IFPRI study in India is examining how local government structure—specifically involving women's leadership—affects the quality of public service provision in Tamil Nadu.

Researchers have also engaged in dialogue with scholars and policymakers to promote the need for increased investment in agriculture and the rural sector.

Country Development Strategy

While rapid economic growth in Asia in the past 20 years has reduced global poverty, poverty in Africa, Latin America, and the Middle East has actually increased. These trends raise difficult questions: why have hunger and poverty persisted despite major global efforts to overcome them during the second half of the 20th century, and how do differences in structural characteristics, institutions, patterns of governance, and development history influence the current development performance of different countries?

A lack of answers to these questions suggests the need for a fundamental shift in the approach to research on development strategies. IFPRI's development strategy program aims to improve mutual learning, knowledge-sharing, and South–South collaboration on development strategies among developing countries by documenting the history of economic reforms in selected countries and developing reform strategies using oral histories.

Cross-country analyses of development paths are also helpful in identifying strategies that have led to successful transformation of agricultural and rural sectors. The research on country development strategies follows a unified framework. By working closely with leading local research institutes and participating in policy dialogues, researchers contribute to an improved understanding of the constraints and opportunities—both economic and political—that these countries encounter on the path to development. Ongoing research activities include analyzing current and proposed growth paths in Ethiopia, Ghana, and other African countries by developing economywide, macro–micro linkage models. The findings show that growth in staple crops and livestock will significantly reduce poverty in these countries, and that broad-based agricultural growth and rural development is essential for achieving the MDGs.

The unified framework, cross country analyses, and testing and sharing of new methods define this research as an international public good.

Genetic Resource Policies for the Poor

Biodiversity and Biotechnology Policies

Sustainable management of crop genetic resources and biodiversity is fundamental for agricultural productivity and rural livelihoods. Fundamental changes are occurring today in the way stakeholders—including farmers, plant breeders, molecular scientists, and genebank managers—use genetic resources. IFPRI research in this area focuses on understanding these changes and on developing policies to promote sustainable management of agricultural biodiversity by enhancing poor farmers' access to diverse crop genetic resources.

In the area of biodiversity, researchers have been investigating the roles that seed markets and systems play in maintaining local crop diversity, as well as the potential use of market-based mechanisms to promote utilization through effective commercialization strategies. Researchers are developing methods to characterize diversity in markets and seed systems and to estimate the impact of seed-system interventions on household vulnerability and farmer access to genetic resources and genetic diversity. Case studies are underway or in preparation for cowpeas, millet, and sorghum in Burkina Faso, Mali, and Niger; for potato in the Andean region; for bananas in East Africa; for minor millet and rice in India; and for sorghum and pigeon peas in Kenya.

In the area of biotechnology, researchers working under IFPRI's South Asia Biosafety Program are assessing the impacts of international biosafety and marketing regulations on the adoption and value of certain genetically modified (GM) crops in India and Bangladesh. Preliminary work has involved the collection of spatially disaggregated data on crop production and abiotic stress for each of the major field crops (corn, rice, wheat) to determine the amplitude of constraints due to drought and salinity. Researchers are also undertaking a quantitative analysis of how alternative biosafety regulations and policies in India and Bangladesh would affect the production, consumption, importation, and exportation of GM and non-GM crops under the international regulatory environment. See the box on page 22 for a statement of IFPRI's position in the public debate over the potential benefits and concerns regarding biotechnology and biosafety.

Agricultural Science and Technology Policy

Many policymakers in developing countries do not have access to the high-quality knowledge and information needed to make informed decisions. Particularly lacking is information and analysis of public policies that can improve the funding, performance, and impact of public and private agricultural research and development, including its consequences for the environment and poverty reduction.

Worldwide, public investment in agricultural research increased by 51 percent in inflation-adjusted terms during the past two decades, from an estimated $15.2 billion in 1981 to $23.0 billion in 2000. The data reveal a significant structural shift: during the 1990s, developing countries as a group undertook more of the world's public agricultural research than the developed countries. The Asia–Pacific region has continued to gain ground, accounting for

an ever-larger share of the developing-country total. Just two countries from this region, China and India, accounted for 39.1 percent of the developing world's experience on agricultural R&D in 2000, a substantial increase from their 22.9 percent combined share in 1981. In stark contrast, Sub-Saharan Africa has continued to lose market share, falling from 17.3 to 11.4 percent of the developing-world total between 1981 and 2000.

In 2000, 80 developing countries in the world got by with a combined total of just $1.4 billion of public agricultural R&D spending (about 6.3 percent of the global total). By way of comparison, more than 35 public universities in the United States each spent in excess of this amount in 2004. Simply maintaining current agricultural R&D policies could leave many developing countries as agricultural technology orphans in the decades ahead.

ASTI

The Agricultural Science and Technology Indicators (ASTI) initiative aims to compile, process, and make available data on institutional developments and investments in agricultural research and development worldwide, and to analyze and report on these trends. In 2005, the ASTI team prepared a new update on global agricultural research investments for the year 2000 (see data mentioned above). It also published a set of 26 country briefs and underlying datasets for Sub-Saharan Africa, and published the first country briefs for the Asia–Pacific region and North Africa. Future plans include completing both country briefs and regional reports for the Asia–Pacific region and the Middle East, updating the Sub-Saharan Africa dataset to capture developments in the region since 2000, and initiating a survey round in Latin America for the same purpose.

Other science and technology researchers working on a project on abiotic stresses are developing a novel framework for rigorously measuring the ex ante value of research on drought tolerance, focusing on staple food crops (maize, wheat, and rice) that underpin food security among poor farmers and consumers. Pilot research is currently underway in Bangladesh, Ethiopia, India, Indonesia, Kenya, Nigeria, the Philippines, and South Africa.

Program for Biosafety Systems

Recent advances in agricultural applications of modern biotechnology, when properly applied, have significant potential to contribute to sustainable gains in agricultural productivity, reduce poverty, and enhance food security in developing regions. A growing body of literature has documented the farm-level benefits of genetically modifying plant varieties for insect resistance or herbicide tolerance. Research is bringing to the pipeline a much wider range of applications, such as enhanced resistance to diseases, enhanced tolerance to drought and to soils contaminated with high concentrations of salt or heavy metals, and improved productivity.

At the same time, the potential for adverse environmental or human health consequences of some transgenic plants has led to the development of regulatory regimes that are specifically applied to assessing the biosafety of these products. The development of an effective national biosafety system is important both to encourage the growth of domestic biotechnologies and to ensure safe access to new products and technologies developed elsewhere. The absence of a suitable regulatory framework hinders the ability of development agencies and the public and private sectors to invest in biotechnology within a particular country and to make the products of biotechnology available in that country. IFPRI's Program for Biosafety Systems (PBS) addresses these challenges through an integrated program of research, capacity development, and outreach. The overall goal of the program is to more effectively address biosafety within a sustainable development strategy, anchored by agriculture-led economic growth, trade, and environmental objectives. By 2008, it is intended that PBS will have

- established a regulatory decisionmaking system that enables safe products to get to market in at least five target countries in Africa and Asia that have demonstrated commitment to applying new biotechnologies in their food and agricultural sectors;
- elicited responses to emerging requirements resulting from international agreements or postcommercialization requirements from target countries with established regulatory systems;
- incorporated the robust regulatory approaches and risk analysis processes for biotechnology applications and commodity trade—based on commissioned scientific and policy research and regional consultations and collaboration with national and regional partners—into decisionmaking processes in target countries; and

- facilitated regulatory authorities and scientific institutions in target countries in conducting and implementing regulatory assessments and timely decisionmaking on a range of promising agricultural biotechnologies and traded commodities.

Latin America

Latin America's economic growth has been disappointing in the past decade, largely because of a significant reduction in the growth rate of exports since 1997. Many countries are experiencing very high levels of income inequality because of extreme differences in asset ownership and human capital. This skewed concentration of income, assets, and skills has meant slow progress in reducing poverty. Reversing this trend will require a sustainable, labor-intensive growth strategy, based as much as possible on targeted investments that raise the income of the poor in the short run and make them more productive in the long run.

Toward that end, IFPRI is undertaking a number of activities in the region. IFPRI has established a Central America Program to help counter worsening rural income distribution and growing environmental degradation in the region and provide policymakers with sound and timely information based on policy research. The Program has been assessing the role of assets in rural household welfare and implications for targeting public investment. The Program is also studying the impact of CAFTA on the region's agriculture and rural sector via an integrated framework linking micro and macro data. Market chain analyses will continue throughout 2006, and public investment work will be initiated. Intermediate results will be disseminated through a series of workshops in five countries. The impact of trade liberalization on rural nonfarm employment will be assessed in 2006–07.

Another initiative is a research project to address how to significantly reduce rural poverty in the High Andes and Amazon Rainforest regions of Peru. Although these regions are of great geographical, cultural, and ethnic heterogeneity, they account for largest proportion of the country's poor.

IFPRI, Agricultural Biotechnology, and Biosafety

A major theme in IFPRI's strategy is food- and nutrition-related science and technology policy, with a focus on how to make technological innovations relevant, safe, and accessible to poor people. The opportunities and risks that agricultural biotechnology—including genetically modified organisms (GMOs)—presents for smallholder farming systems, poor consumers, biodiversity, and trade are high on the Institute's research agenda, together with biosafety policy issues, which encompass environmental and food safety considerations. IFPRI attempts to align these fundamental biological and policy concerns with its commitment to improve livelihoods and reduce poverty in developing countries.

IFPRI acknowledges that among the biotechnologies, GMOs are controversial. In accordance with standard practice in the Consultative Group on International Agricultural Research (CGIAR), IFPRI therefore favors public dialogue and transparency in conducting research on GMO technology. IFPRI provides concepts for designing such dialogues among all relevant stakeholders, including governments, parliaments, civil society, and the private sector. IFPRI takes a holistic approach to biotechnology research, examining aspects from biosafety to social issues and the functioning of regulatory bodies, all of which shape GMO science and policy.

The development of molecular biology and biosafety is subject to numerous international agreements, intellectual property considerations, and research and regulatory capacities that operate under rapidly changing circumstances. Furthermore, technologies, genetic traits, and new knowledge accumulate at a rapid pace in the fast-growing world of biotechnology. This complex and dynamic environment creates major challenges for decisionmakers and researchers. IFPRI continually reviews and comments on related biopolicies, especially from the perspective of developing countries and poor people.

Within this context, IFPRI will support developing countries by providing research-based information and capacity development that will increase the accuracy and efficiency of their decisionmaking with respect to biotechnology and biosafety. IFPRI acknowledges that, ultimately, the decisions on these topics will be made by sovereign national bodies, consumers, and farmers, weighing the risks and benefits of using or not using technologies.

Agricultural biotechnologies are a broad and promising area of science. The use and development of genetically modified crops is one option that developing countries are considering to meet food needs, reduce poverty, and enhance environmental sustainability through improved productivity. Policy research should address all aspects of this process—from product research to product approval, introduction, and marketing—and help ensure that all steps are undertaken transparently.

IFPRI does not advocate or take a general position on the utility and safety of genetically modified crops, as these are, to a considerable extent, context- and technology-specific. The Institute seeks to provide information that will allow others to make informed choices. ■

Institutions and Infrastructure for Market Development

Most smallholders in developing countries either practice subsistence farming or operate almost entirely in local markets because they do not have access to more lucrative provincial, national, or global ones. Because incentives are weak, investments are low, and the level of technology adoption and productivity is at a minimum, many smallholders find themselves in a low-level equilibrium poverty trap. To address this situation, IFPRI is helping to provide strategic inputs that can enhance the competitiveness of smallholders and the poor in rural areas in the production and marketing of their resources.

One cross-divisional project focuses on rural development and poverty reduction in the Peruvian Sierra, where most of the country's poverty is concentrated. Poor households in the region are not well-linked to the modern economy of the coast and do not benefit from economic growth generated elsewhere in the country. The project aims to design a framework for policy interventions that can overcome current bottlenecks in the identified regions, provide a roadmap for the actions and investments in institutions and infrastructure that would be required to realize the region's potential, and validate the framework through pilot projects that can eventually be transferred to other regions. A typology of the various microregions was developed in 2005 and will be followed by a regionalized simulation model of the Peruvian economy, a market chain analysis to identify the major bottlenecks, the establishment of a database of alternative solutions for the different types of microregions, and a plan to implement those solutions in three specific regions.

Participation in High-Value Agricultural Markets

Many developing countries are experiencing rapid growth in the demand for high-value agricultural products (HVAPs)—such as meat, milk, eggs, fish, fruits, and vegetables—as a result of rising income and urbanization. In addition, trade liberalization and improved logistics are making it easier for farmers in developing countries to supply consumers in higher income countries. These trends create opportunities for small farmers to diversify from staple food crops into HVAPs, which generate higher returns per hectare of farmland. But small farmers face difficulties meeting increasingly strict quality and food safety standards and achieving the minimum volumes required by supermarkets, processors, and exporters.

An IFPRI project is studying one such mechanism, contract farming, in four Asian countries: China, India, Indonesia, and Thailand. The first farmer survey was conducted in China, covering growers of poultry, shallots, and apples. Similar work is nearing completion in India and Indonesia, and the Thailand study will be launched this year.

An IFPRI/ILRI Joint Program on Livestock Market Opportunities has also been investigating the true costs and benefits of using contract farming to support smallholder participation in growing markets for milk and poultry in India, and for swine in northern Vietnam, where large-scale swine operations have displaced smallholder production in much of the area. The objective is to find ways to reduce the cost of production and marketing for smallholders, increase their access to services, ensure consistent supplies, reduce negative impacts on the environment and public health, and promote the equitable development of the community at large.

Market reforms and infrastructure improvement can also play a significant role in helping producers to participate in valuable markets. The Government of Tanzania has initiated wide-ranging reforms to allow markets to play a larger role in the economy and has begun to establish new markets to help improve standards, minimize marketing risks, and develop producer–consumer linkages. Another IFPRI project is studying the impact of new markets in Morogoro and Kibaigwa.

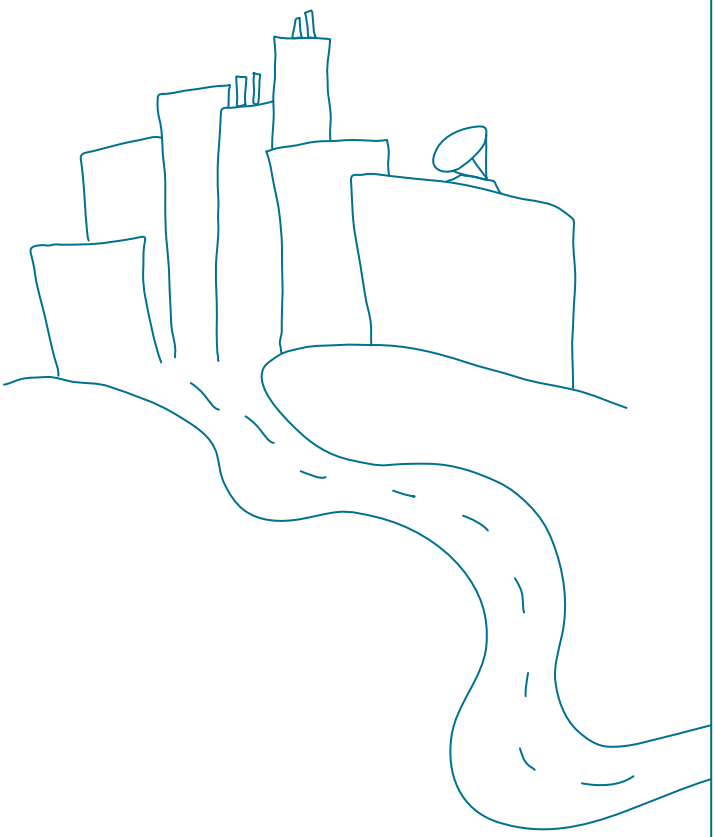
Urban–Rural Linkages

Small rural towns and nearby villages are strongly linked through consumption, production, employment, financial institutions, and economic and social services. While villages are the strong beneficiaries of linkages, small towns also benefit from the labor, inputs, and markets of nearby villages. Nevertheless, the relationship in many developing countries is still characterized by economic dualism arising from industrialization and development strategies founded on the transfer of resources and labor surpluses from the traditional (or rural) sector to the modern (or urban) sector. These strategies have largely favored the development and growth of the urban sector at the expense of rural areas. Therefore, it is important to analyze how governments in developing countries can correct these distortions so that resources like labor, capital, and goods can be moved more freely.

Studies of rural–urban linkages indicate that the linkages vary from place to place and among different sectors in the same place. Linkages have also changed over time due to increasing globalization, decentralization, and the rapid development of communication technologies. It is therefore necessary to identify successful practices and policy instruments that promote rural and urban development.

The goal of this research is to analyze policy options to strengthen urban–rural linkages, in turn reducing both rural and urban poverty. More specifically, IFPRI will conduct research and outreach activities to help

- enhance smooth rural–urban migration;
- reduce institutional and policy barriers that hinder interlinkages between rural and urban product markets, particularly for high-value commodities;
- integrate rural and urban financial and capital markets and other services;
- promote small- and medium-sized rural towns in developing linkages between rural and urban areas; and
- develop rural nonfarm sectors.



Institutional Change in Agricultural Innovation Systems

The nature of rural poverty in developing countries is changing as a result of new technological, market, and institutional opportunities. Today, the rural poor depend less on agriculture and more on nonfarm income than they did 30 years ago. Yet despite expanding livelihood options for the rural poor, poverty is still prevalent. In large part, this is due to insufficient access to new and existing knowledge—for example, how to enhance production, market surplus output, and meet quality standards. In short, smallholder farmers and other groups are challenged by a limited ability to search and use information, combined with institutional constraints that restrict their ability and opportunities to innovate.

IFPRI's goal, therefore, is to enhance the ability of smallholder farmers and other marginalized groups to access knowledge and benefit from new opportunities. Research in this area, managed by IFPRI's ISNAR Division, involves projects in Bolivia, Ethiopia, Mexico, Nicaragua, and across Latin America. The work focuses on analyzing agricultural innovation systems and processes to identify their potential for rural growth and poverty reduction; analyzing the impacts of innovation on poverty reduction to inform project and policy design; and understanding innovation processes as they relate to prevailing socioeconomic realities in agriculture.

Near East and North Africa

The number of food-insecure people in the Near East and North Africa has been increasing in the last couple of decades due to a variety of economic and political factors. Geographically, the region is home to a significant expanse of semi-arid, less-favored lands. These areas are challenged by difficult agroclimatic conditions (poor soils, low and unstable rainfall, steep slopes, and short growing seasons), and many have poor public infrastructure and services (roads, irrigation, markets, research and extension, credit, schools, and health centers).

Past agricultural development strategies have predominantly emphasized irrigated agriculture and high-potential rainfed lands. This strategy has produced spectacular production and growth successes in many developing countries. At the same time, however, large areas of less-favored lands have been neglected. With rapid population growth, these lands are becoming major areas of rural poverty, food insecurity, and resource degradation. IFPRI is therefore examining strategies for sustainably intensifying agriculture and opportunities for rural employment in the region. It is also studying the role of public investments in achieving the area's Millennium Development Goals.

Erratic policy and economic reforms in the region—including sector and structural adjustment programs aimed at effecting economic liberalization, privatization of public assets, and decentralization—have created another obstacle to the region's growth and development. This has resulted in a volatile policy environment, making it difficult for development institutions to design effective programs. Recognizing this situation, IFPRI is investigating how to create local institutions that empower the poor and give them flexibility in adjusting to the evolving and unstable policy and economic environment.

Policy Communications

IFPRI has impact when hungry and poor people in developing countries benefi t from its research fi ndings. It achieves that impact when it engages in dialogue with all those who can use IFPRI's research results and foster public awareness about food and nutrition security; and when key stakeholder groups in developing and developed countries turn to IFPRI as a prime contact for factual, timely, and competent information on all questions related to food and nutrition security, poverty eradication, and natural resource management.

IFPRI's policy communication activities are conducted in close collaboration with its research and outreach activities and with the 2020 Vision Initiative. The Institute uses new technologies to engage with constituencies and disseminate research fi ndings through publications, the media, a website and other electronic/digital means, and via conferences and other meetings. IFPRI is also committed to the peer-review process via its Publication Review Committee to ensure the academic quality of IFPRI's publications.

Each communications product or activity is geared to a particular audience. Media briefi ngs and releases are intended to reach infl uential decisionmakers and the broader public; reports and books are produced for the research community; briefs, seminars, the website, and other means reach policymakers and a range of other groups.

In 2005, IFPRI published more than 25 books, research reports, and numerous other publications (see the publications list on page 30 and the CD–ROM) and distributed more than 22,000 publications at 40 external meetings. The Institute also improved electronic access to its research via the web. When IFPRI's library joined the Open WorldCat initiative with Google Scholar, for example, its website linkages increased from 22,600 in August 2005 to 61,400 in September 2005. All told, traffi c to IFPRI's website increased by about 700,000 hits in a span of 12 months.

IFPRI also brought research to stakeholders through media outreach, holding about 30 press events in the last year. The number of journalists that subscribe to the media list has now topped 700 and represents countries from all continents. Finally, the Institute organized more than 25 policy seminars and other meetings that allowed IFPRI researchers and key stakeholders to debate the merits and policy implications of recent research fi ndings.

2020 Vision for Food, Agriculture, and the Environment Initiative

The 2020 Vision Initiative seeks to develop a shared vision and consensus for action to meet food needs while reducing poverty and protecting the environment by

- supporting research on emerging issues that influence global food prospects (such research includes the development of risk scenarios and policies to reduce hunger and malnutrition);
- generating policy-relevant information to raise public awareness, enhance dialogue and debate, and influence action by governments, nongovernmental organizations, the private sector, international development institutions, and other key actors; and
- convening international forums where policymakers and other food system stakeholders can develop consensus on strategies and actions to improve food security.

There is growing recognition that agriculture influences health, and health influences agriculture. The 2020 Initiative commissioned and recently published a set of policy briefs on this topic (2020 Focus 13), accompanied by a panel discussion, with a view to improving the understanding of the dynamics of these linkages and opportunities for closer cooperation, such that the agricultural sector can contribute to health outcomes and the health sector can promote agricultural productivity.

Much attention has been paid to the Millennium Development Goals (MDGs), but even if they are successfully achieved in 2015, many people will continue to live in extreme poverty and hunger, since the goals focus on halving the proportion of poor and hungry people—not the overall number. The 2020 Initiative takes stock of progress toward achieving the MDG hunger and poverty targets, analyzes which interventions have successfully reached those most afflicted and which have not, assesses whether and how policies need to be modified, and develops consensus on new strategies and actions for eradicating poverty and hunger.

Given the current climate of skyrocketing oil prices, the 2020 Initiative has also initiated a set of policy briefs that will examine agriculture as a consumer and producer of energy, the implications for poverty and food security, and the policy challenges for developing countries.

Organization and Management for Strengthening Agricultural Research

The weak organization and management of food and agricultural research institutions and the need for human and institutional capacity strengthening in agricultural development are becoming significant impediments to food security and poverty reduction in the developing world. Poverty reduction and economic growth through agricultural research and innovations greatly depend on the degree of internal efficiency and effectiveness of agricultural research organizations, advisory systems, and universities, as well as farmer organizations. Organizational inefficiencies and inadequate responsiveness to client needs and market demands are central challenges to organizational effectiveness. Related concerns include inadequate staff motivation and low morale; limited research and service outputs; limited uptake or use of research findings, new technologies, or products; and "brain drain" from the public sector.

Research on this topic, managed by IFPRI's ISNAR Division, aims to address these and related challenges by developing innovative approaches and methods to enhance the organizational efficiency and effectiveness of agricultural research organizations. The work focuses on three key research areas: scope, scale, and resourcing. Researchers are currently involved in three projects that began in 2005: developing and testing approaches and methods that bring purposive collective action in agricultural research organizations; creating and institutionalizing a Center for Agricultural Research Management and Policy Learning in eastern Africa; and supporting the development of a postgraduate program in agricultural research management and policymaking at Makerere University in Uganda.

Researchers are also initiating projects to catalyze the development of African producer organizations (including smallholder farmers) in order to spearhead agricultural innovation and create pluralistic, effective, and efficient advisory services in Africa.

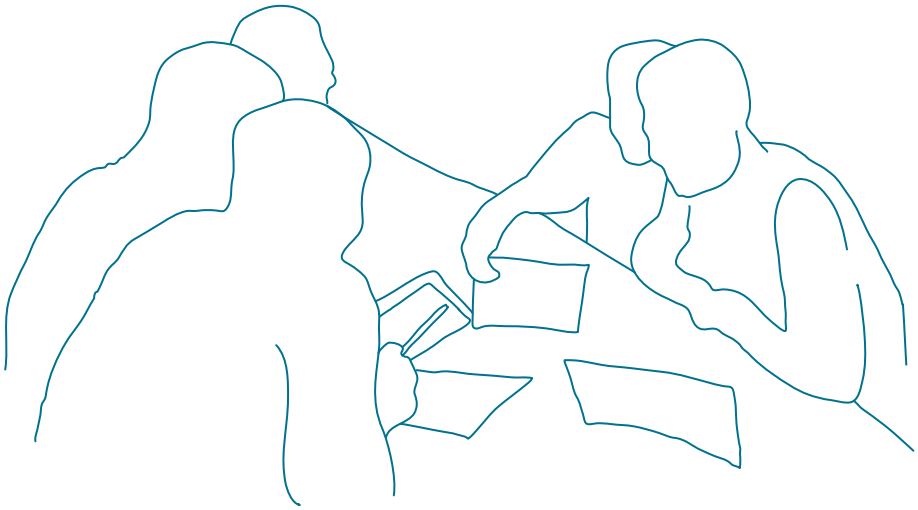
Learning and Capacity Strengthening

Human, institutional, and organizational capacities for designing and implementing food policies and programs are essential for reaching development objectives. However, there are enormous challenges associated with strengthening capacity in developing countries, not least of which is limited resources. Another challenge is that unfavorable working conditions and low incentives in national agricultural resource systems have led to the erosion of institutional capacity in developing countries, with the result that capacities in those countries are worse now than 10 years ago.

IFPRI is therefore working to implement capacity strengthening activities based on the Institute's research and share best practices and course content to improve teaching and learning capacity. In addition, IFPRI provides training materials, course content, and socioeconomic data sets as international public goods, and assesses the impact of capacity strengthening activities through cross-country studies.

In 2005, the program, which is part of IFPRI's ISNAR Division, collaborated with all of IFPRI's divisions to implement capacity strengthening activities. As part of this collaboration, it conducted 18 training workshops in 10 countries, including Burkina Faso, Ethiopia, Ghana, India, Mali, the Philippines, Senegal, Sri Lanka, and Uganda. The program provided cutting-edge knowledge on specialized topics and stimulated regional discussion. A total of 562 participants attended these training courses, while more than 100 other participants from developing countries were involved in e-learning sessions on research skills. In addition, the program has worked to build capacity by offering a wide range of socioeconomic data sets as global public goods, using IFPRI's website as a portal. It offered 22 new data sets for dissemination in 2005.

Finally, as part of the Global Open Food and Agriculture University initiative, which the CGIAR and partner universities have undertaken to strengthen existing masters of science programs by providing high-quality course materials, faculty capacity strengthening, and thesis facilitation, IFPRI has helped implement a pilot program in agricultural economics and is working to implement further activities.



RESEARCH REPORTS

Number 143
Power, Politics, and Performance: Community Participation in South African Public Works Programs, by Michelle Adato, John Hoddinott, and Lawrence Haddad.

Number 142
The Impact of Agroforestry-Based Soil Fertility Replenishment Practices on the Poor in Western Kenya, by Frank Place, Michelle Adato, Paul Hebinck, and Mary Omosa.

Number 141
Impact Evaluation of a Conditional Cash Transfer Program: The Nicaraguan Red de Protección Social, by John A. Maluccio and Rafael Flores.

Number 140
Policy Analysis for Sustainable Land Management and Food Security in Ethiopia: A Bioeconomic Model with Market Imperfections, by Stein Holden, Bekele Shiferaw, and John Pender.

Number 139
PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico, by Emmanuel Skoufias.

Number 138
Road Development, Economic Growth, and Poverty Reduction in China, by Shenggen Fan and Connie Chan-Kang.

The policy implications of each research report are summarized in the 2-page IFPRI abstract series.

BOOKS

Institutional Reforms in Indian Irrigation, by Ashok Gulati, Ruth Meinzen-Dick, and K.V. Raju. Published by Sage, India, for IFPRI.

Food Policy for the Poor: Expanding the Research Frontiers, Highlights from 30 Years of IFPRI Research, edited by Joachim von Braun and Rajul Pandya-Lorch. Published by IFPRI.

Biotechnology, Agriculture, and Food Security in Southern Africa, edited by Steven Were Omamo and Klaus von Grebmer. Published by IFPRI and the Food, Agriculture and Natural Resources Policy Network.

Water Rights Reform: Lessons for Institutional Design, edited by Bryan Randolph Bruns, Claudia Ringler, and Ruth Meinzen-Dick. Published by IFPRI.

FOOD POLICY REVIEW

Number 7
HIV/AIDS and Food and Nutrition Security: From Evidence to Action, by Stuart Gillespie and Suneetha Kadiyala.

FOOD POLICY STATEMENT

Number 42
Institutional Reforms in Indian Irrigation, by Ashok Gulati, Ruth Meinzen-Dick, and K.V. Raju.

RESEARCH AT A GLANCE

Genetic Resource Policies: What is Diversity Worth to Farmers? Briefs 13-18, by Melinda Smale and Amanda King.

BOOKLETS

South Asia: Agricultural and Rural Development (Proceedings of Seminars, March 2005: New Delhi, Lahore, Chennai, Dhaka)

Lessons Learned from the Dragon (China) and the Elephant (India). This collection of essays, reprinted from IFPRI's 2004–2005 annual report, contains the following:

Agricultural and Economic Development Strategies and the Transformation of China and India, by Joachim von Braun, Ashok Gulati, and Shenggen Fan.

Reducing Poverty and Hunger in India: The Role of Agriculture, by Montek S. Ahluwalia.

The Achievements and Experiences of Poverty Alleviation in Rural China, by Jian Liu.

ISSUE BRIEFS *(also see 2020 Vision section)*

Strategic Environmental Assessment: Assessing the Environmental Impact of Biotechnology, by Nicholas A. Linacre, Joanne Gaskell, Mark W. Rosegrant, Jose Falck-Zepeda, Hector Quemada, Mark Halsey, and Regina Birner.

ICTs: Information and Communication Technologies for the Poor, by Maximo Torero and Joachim von Braun.

Africa Without Borders: Building Blocks for Regional Growth, by Xinshen Diao, Michael Johnson, Sarah Gavian, and Peter Hazell.

Beyond Rural Urban: Keeping up with Changing Realities, by James Garrett. Plus three 2-page inserts.

Dialogues: The Shaping of Biotechnology in Southern Africa, by Steven Were Omamo and Klaus von Grebmer.

Nicaragua: Red de Protección Social– Mi Familia: Breaking the Cycle of Poverty, by John A. Maluccio, Michelle Adato, Rafael Flores, and Terry Roopnaraine.

Women: Still the Key to Food and Nutrition Security.

RESEARCH BRIEF

Indian Agriculture and Rural Development: Strategic Issues and Reform Options, by Joachim von Braun, Ashok Gulati, Peter Hazell, Mark W. Rosegrant, and Marie Ruel.

A 2020 VISION FOR FOOD, AGRICULTURE, AND THE ENVIRONMENT

Discussion Papers

Number 41
Looking Ahead: Long-Term Prospects for Africa's Agricultural Development and Food Security, by Mark W. Rosegrant, Sarah A. Cline, Weibo Li, Timothy B. Sulser, and Rowena A. Valmonte-Santos.

Number 40
The Family Farm in a Globalizing World: The Role of Crop Science in Alleviating Poverty, by Michael Lipton.

Number 39
New Risks and Opportunities for Food Security: Scenario Analyses for 2015 and 2050, by Joachim von Braun, Mark W. Rosegrant, Rajul Pandya-Lorch, Marc J. Cohen, Sarah A. Cline, Mary Ashby Brown, and María Soledad Bos.

Policy Briefs

Number 74
The Family Farm in a Globalizing World: The Role of Crop Science in Alleviating Poverty, by Michael Lipton.

Number 73
New Risks and Opportunities for Food Security: Scenario Analyses for 2015 and 2050, by Joachim von Braun, Mark W. Rosegrant, Rajul Pandya-Lorch, Marc J. Cohen, Sarah A. Cline, Mary Ashby Brown, and María Soledad Bos.

Issue Briefs

Facing Alternative Futures: Prospects for and Paths to Food Security in Africa (2020 Africa Conference Brief 17), by Mark W. Rosegrant, Sarah A. Cline, Weibo Li, Timothy B. Sulser, and Rowena A. Valmonte-Santos.

Increasing Access to Infrastructure for Africa's Rural Poor (2020 Africa Conference Brief 16), by Maximo Torero and Shyamal Chowdhury.

IFPRI FORUM *(quarterly newsletter)*

December 2005
Building Local Skills and Knowledge for Food Security

September 2005
A Viable Future for Small Farmers?

June 2005
Can Public and Private Sectors Work Together for the Poor?

March 2005
When Disaster Strikes

Each issue is 12 pages long and includes an insert describing recent publications.

GENERAL INFORMATION

Annual Report 2004-2005

IFPRI's Strategy: Toward Food and Nutrition Security (updated)

IFPRI's Strategy at a Glance

IFPRI at a Glance

Division Information Sheets

Environment and Production Technology

Food Consumption and Nutrition

International Service for National Agricultural Research

Markets, Trade, and Institutions

CD-ROMS

IFPRI Publications in 2004
Includes 2004-2005 Annual Report and Essays

ECOGEN: Economics Literature on Crop and Livestock Genetic Resources
Produced for CGIAR System-wide Genetic Resources Program (SGRP) by IFPRI, ILRI, and IPGRI

Food and Nutrition Security in South Asia
Produced for IFPRI Board Meeting and Seminars in India, Bangladesh, and Pakistan

The Future of Smallholder Farming in Eastern Africa: The Roles of States, Markets, and Civil Society
Conference Proceedings

Partnership for the Poor
Proceedings of a Conference: Pro-Poor Public-Private Partnerships for Food and Agriculture: An International Dialogue
Washington, D.C. September 28–29, 2005

IFPRI Research in Asia, January 2000 — August 2005
Produced for the SEARCA conference "Agricultural and Rural Development in Asia"

50lbs of Agricultural Economics Literature: IFPRI Research and Teaching Materials, 2004-2005
Produced for the 2005 AAEA meeting

M.Sc. in Agricultural Economics/Agribusiness
Curriculum, Course Outline, and Reading Materials
Produced for CGIAR: Global Open Food and Agriculture University

Contributions to Masters Programs in Agroecology
Curriculum and Course Materials
Produced for CGIAR: Global Open Food and Agriculture University

Engendering Better Policies: 15 years of Gender Research From IFPRI
Produced for the Beijing +10 conference

Information for Journalists: Agriculture, Hunger, Poverty and the Environment

Agricultural R&D in Sub-Saharan Africa: Recent Country Briefs and Datasets
Produced for ASTI

TRANSLATIONS

Briefs

French
Africa without Borders: Building Blocks for Regional Growth, by Xinshen Diao, Michael Johnson, Sarah Gavian, and Peter Hazell.

The World Food Situation: An Overview, by Joachim von Braun, brief prepared for CGIAR Annual General Meeting, Marrakech, Morocco, December 6, 2005.

Spanish
Biotechnology and Genetic Resource Policies (6 Briefs), edited by Philip Pardey and Bon Woo Koo.

Nicaragua: Red de Protección Social -- Mi Familia: Breaking the Cycle of Poverty, by John Maluccio, Michelle Adato, Rafael Flores, and Terry Roopnaraine.

Essay

Arabic, Chinese, French, Japanese, and Spanish
Agriculture, Food Security, Nutrition and the Millennium Development Goals, by Joachim von Braun, M.S. Swaminathan, and Mark Rosegrant.

Brochures

Chinese
IFPRI's China Program

French
IFPRI at a Glance *(updated)*

International Service for National Agricultural Research (ISNAR)

Pro-Poor Public Investment Program: Priorities, Financing, and Governance

Spanish
International Service for National Agricultural Research (ISNAR)

Pro-Poor Public Investment Program: Priorities, Financing, and Governance

Arabic, French, and Spanish
IFPRI Strategy at a Glance

2020 Vision Focus Briefs

Spanish
Collective Action and Property Rights for Sustainable Development, Focus 11 (16 briefs).

Abstracts

Spanish
PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico, Abstract 139, by Emmanuel Skoufias

IFPRI's Strategy

French and Spanish
IFPRI's Strategy: Toward Food Security and Nutrition (updated)

External publications by IFPRI staff in 2005 are listed in the enclosed CD-ROM.

Included on this CD-ROM

- Annual Report 2005–2006
- Annual Report Essay 2005–2006
- IFPRI Collaborators 2005
- External Publications by IFPRI Staff 2005
- Full Text of Most 2005 Publications

Presented here is a summary of financial information for the years ending December 31, 2005 and December 31, 2004. The full financial statements and the independent auditors' report are available from IFPRI on request.

Balance Sheets

2005 and 2004 (US$ thousands)

Assets		2005	2004
Current Assets	Cash and cash equivalents	$ 6, 207	$ 1, 968
	Investments	4,737	8,188
	CGIAR grants receivable	2.393	1,437
	Restricted projects receivable (net)	6,643	5,231
	Other receivables	1,297	1,443
	Other current assets	315	488
	Total Current Assets	21,592	18,755
	Investments–long term	7,929	9,325
Other assets	Property and equipment, net	1,393	849
	Total assets	$ 30,914	$ 28,929
Liabilities and net assets			
Current liabilities	Accounts payable and accrued expenses	$ 2,978	$ 1,748
	Accrued vacation	1,221	1,073
	Advance payment of CGIAR grant funds	1,546	1,057
	Unexpended restricted project funds	6,790	9,027
	Amount held for Challenge Program	6,583	3,210
	Total Current liabilities	19,118	16,115
Noncurrent liabilities	Deferred rent	321	530
	Accrued post-retirement benefits	1,188	926
	Total noncurrent liabilities	1,509	1,456
	Total liabilities	20,627	17,571
Net assets-unrestricted	Operating reserves	8,894	9,370
	Reserves allocated for subsequent year expenditure	-	1,139
	Net investment in property and equipment	1,393	849
	Total net assets	10,287	11,358
	Total liabilities and net assets	$ 30,914	$ 28,929

Statements of Revenue, Expenses, and Changes in Operating Reserves

2005 and 2004 (US$ thousands)

Revenue		2005	2004
Grant and contract income			
	Unrestricted	$ 14,577	$ 13,007
	Restricted	24,319	20,280
Investment income		448	195
Foreign exchange (loss) gain		(100)	608
	Total revenue	39,244	34,090
Expenses			
Program services	Direct research and outreach	35,207	27,820
Management and general		5,108	4,087
	Total expenses	40,315	31,907
	(Deficit) Surplus	(1,071)	2,183
Transfer from reserves allocated for subsequent year expenditure		1,139	1,421
Transfer to net investment in property and equipment		(544)	(406)
	(Decrease) Increase in working capital fund	(476)	3,198
Operating reserves, beginning of year		9,370	6,172
Operating reserves, end of year		$ 8,894	$ 9,370

Schedule of Expenses by Type

(US$ thousands)

Expenses	2005	2004
Personnel	$ 17,249	$ 14,007
Collaboration/field expenses	10,833	7,035
Travel	3,342	3,383
Trustees' expenses (nontravel)	130	113
Operations, supplies, and services	8,255	7,059
Depreciation/amortization	506	310
Total	$ 40,315	$ 31,907

This list reflects personnel employed by IFPRI in 2005, including part-time staff members. *Indicates staff who departed in 2005, **indicates staff who commenced in 2005, ***indicates staff who moved to another division in 2005. Country indicates citizenship of staff member.

DIRECTOR GENERAL'S OFFICE

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Chief of Staff
Rajul Pandya-Lorch, Kenya

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Peter Hazell, United Kingdom*/***
(moved from DSGD)

Africa Coordinator
Ousmane Badiane, Senegal*/***
(moved from DSGD)

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(moved to FCND)
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Amit Thorat, India**

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Office Assistant
Manoj Kumar**

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Xinshen Diao, China
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Nanteza Millie Galabuzi

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Geoffrey Orwenyo

Guard/Gardener
Richard Oyare

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Jaime Tola, Ecuador*

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Nienke Beintema, Netherlands

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Workwuha Wondirad, Ethiopia
Wagaye Woldemariam, Ethiopia
Etnesh Yitna, Ethiopia

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Tewabach Meshensha, Ethiopia

Training Assistant
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